

4.2.2.2.3 Shut Down and Maintain

This alternative would produce the same impacts as the Shut Down and Deactivate Alternative, but a restart of the River Water System could increase flows to the streams.

4.2.3 GROUNDWATER

This section describes groundwater conditions in the vicinity of potentially affected SRS streams (Steel Creek, Pen Branch, Fourmile Branch, and Lower Three Runs).

4.2.3.1 Affected Environment

Hydrogeologic Setting

In general on the SRS, the water table aquifer and the first confined aquifer recharge to the streams that incise them. The water table aquifer discharges to both Steel Creek and Pen Branch tributaries. The groundwater flow to Steel Creek and L-Lake from the L-Area is toward the southeast. The groundwater flow to Pen Branch from L-Area is to the northwest. Although groundwater discharges to L-Lake in its upstream portions, lake water at the L-Lake dam recharges the water table aquifer. The net flux of groundwater in the first confined aquifer is believed to originate from L-Lake and the water table aquifer (del Carmen and Paller 1993b). Further downstream, the aquifers resume discharge to the stream in a southerly direction. Below the Par Pond Dam, the water table aquifer and first confined aquifer discharge to the Lower Three Runs stream valley. Hydraulic properties for the aquifers are not available for specific stream areas. Therefore, Tables 4-1 and 4-2 list general sitewide data.

4.2.3.2 Environmental Impacts

4.2.3.2.1 No Action

DOE anticipates no changes in current conditions for the water table aquifer or the first confined aquifer because the lake level would be maintained.

4.2.3.2.2 Shut Down and Deactivate

Water Table Aquifer

The current outfall from L-Area would be eliminated and L-Lake levels would lower. Because L-Lake discharges to the water table aquifer below the dam and into Steel Creek, groundwater gradients, levels, and flow rates of the aquifer would decrease over the near term but would eventually return to the natural hydrogeologic state. Groundwater properties would remain stable downstream from the dam.

Fourmile Branch and headwaters of Steel Creek would not receive outfall discharges from the River Water System. The water table aquifer at Lower Three Runs would not be affected because its source of water is not directly related to the River Water System.

First Confined Aquifer

Because none of the SRS streams and their outfalls currently or directly affect the properties of this aquifer, shutting down the River Water System would not have an effect.

4.2.3.2.3 Shut Down and Maintain

The impacts described in Section 4.2.3.2.2 would also apply to this alternative.

4.2.4 AIR RESOURCES

4.2.4.1 Affected Environment

The climate, meteorology, and ambient air quality for the SRS streams are equivalent to those for the SRS, which is discussed in Section 4.1.4.1. DOE assumes that joint wind frequency data from the L-Area tower and meteorological and climatological data from other SRS locations would be applicable to the streams.